

Serial No. 10/541,929
Art Unit 2621

Docket PU030019
Customer No. 24498

REMARKS

Applicant has carefully reviewed the Official action mailed on March 9, 2009. To better clarify her invention, applicant has amended claims 1 and 15. The claim amendments do not alter the scope of the claims nor do they introduce new subject matter. Following the claim amendments, claims 1-23 remain pending in this application.

35 U.S.C. § 102(b) Rejection of Claim 1

Claim 1 stands rejected under 35 U.S.C. § 102(b) as anticipated by U.S. Patent 5,621,467, issued April 15, 1997 in the name of Max Chien et al. ("The Chien et al. patent") Applicant respectfully traverses the rejection in view of the following remarks.

As recited in claim 1, applicant provides a method for concealing errors in a coded image. The method commences by first identifying a macroblock having one of a missing or corrupted values. At least one intra-prediction mode is derived for the block to establish a concealment direction. An interpolation filter estimates concealment values along the concealment direction. Concealment of the macroblock occurs in accordance with the concealment values estimated by the interpolation filter along the concealment direction.

The Chien et al. patent describes a video decoder that performs error concealment using substitute data generated by an interpolation apparatus that includes a spatial interpolator (44). The interpolated data undergoes a transformation to coefficients representing the frequency spectra from which a substitute block of coefficients is assembled for conversion to the spatial domain.

Notwithstanding the examiner's comments to the contrary, applicant's claimed error concealment technique recited in claim 1 possesses novelty over the Chien et al. patent. Among the steps recited in applicant's claimed concealment technique are (1) deriving at least one intra-prediction mode to define a concealment direction, and (2) establishing an interpolation filter for estimating concealment values along the concealment direction. The Chien et al. patent fails to teach both of these features of applicant's claimed technique.

The error concealment apparatus depicted in the Chien et al. patent does not derive an "intra-prediction" mode as recited in applicant's claim 1. The term "intra-prediction" as used in the context of coded images, refers to the process of predicting a coded or compressed value of a pixel from a neighboring pixel in within the same image. Many coding standards allow several intra-prediction modes. For example, the H.264 compression standard

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established by the ISO/ITU, (now commonly referred to as the "JVT" coding standard), allows nine (9) separate intra prediction modes. Each intra-prediction mode permits prediction along a particular direction, as discussed at Page 4, lines 13-25 of applicant's specification. Thus for example, when using intra-prediction Mode 0, prediction occurs in a vertical direction. Applicant has found that the direction associated with a particular intra-prediction mode advantageously constitutes a good direction for achieving error concealment. To that end, applicant establishes an interpolation filter for estimating for estimating a concealment value along the concealment direction.

At best, the error concealment apparatus depicted in Chien et al. establishes three separate error concealment modes, namely (1) temporal replacement; (2) spatial interpolation; and (3) a combination of temporal replacement and spatial interpolation. Executing each of the error concealment modes described by Chien et al. represents an entirely different operation than deriving at least one an intra-prediction mode as recited in applicant's claims. Indeed, selection of a particular one of the error concealment modes, as described at Col. 4, lines 18-35 of Chien et al. has nothing to do with coding prediction, and in particular, deriving a particular intra prediction mode associated with coding prediction. Thus, Chien et al. provides no disclosure or suggestion of applicant's featuring of deriving an at least one intra-prediction mode in order to establish a concealment direction.

Further, Chien et al. provide no disclosure or suggestion of establishing an interpolation filter for estimating concealment values along the concealment direction. At best, Chien et al discloses a spatial interpolator (44) that provides directional interpolation in accordance with a dominant image gradient (Col. 9, lines 56-58 of Chien et al.). Thus, the concealment direction does not depend on the intra-prediction mode, but on local image contours or strongly characterized edge characteristics (See Col. 5, lines 45-52 of Chien et al.).

In summary, Chien et al. fails to teach or suggest applicant's features of (1) deriving at least one intra-prediction mode to define a concealment direction, and (2) establishing an interpolation filter for estimating concealment values along the concealment direction. Therefore, claim 1 patentably distinguishes over the Chien et al patent, and applicant requests withdrawal of the 35 U.S.C. § 102(b) rejection of this claim.

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35 U.S.C. § 103(a) Rejection of Claims 2-23

Claims 2-23 stand rejected under 35 U.S.C. § 103(a) as obvious over the Chien et al. patent, in view of the paper "H.264/MPEG-4 Part 10- Intra Prediction" by Ian Richardson (hereinafter, the "Richardson paper"). The examiner contends that the Richardson paper was published July 2002, based on the "Internet Citation XP002973807". Applicants' attorney has independently searched the Internet and can only find this paper available as of October 7, 2002. To the extent the examiner relies on the July date, applicant's attorney asks that the examiner substantiate that date. Irrespective whether the Richardson paper was first available in July or October 2002, applicant respectfully traverses the rejection because the combination of Chien et al. and Richardson do not recite all of the features of applicant's independent claims.

As discussed above with respect to claim 1, the Chien et al. patent does not teach or suggest applicant's features of (1) deriving at least one intra-prediction mode to define a concealment direction, and (2) establishing an interpolation filter for estimating concealment values along the concealment direction. At best, the Richardson paper describes the inter-prediction process by which an intra-prediction model serves to predict intra-coded P slices in a H.264 coder-decoder. The inter-prediction model is formed by shifting samples of the reference frame.

Applicant acknowledges the disclosure in the H.264 standard of using inter-prediction for predicting coding values. Indeed, applicant's specification contains numerous references to the prediction process described in the H.264 standard. The examiner should understand that applicant does not seek to claim inter-prediction coding *per se*. Rather, applicant's claims recited a method of concealing errors along an error concealment direction derived from the intra-prediction mode for the macro block containing a missing or corrupted pixel. The Richardson paper says nothing whatsoever regarding error concealment, let alone the desirability of performing error concealment direction derived from the intra-prediction mode.

Thus, neither the Chien et al. patent nor the Richardson paper discloses applicant's features of: (1) deriving at least one intra-prediction mode to define a concealment direction, and (2) establishing an interpolation filter for estimating concealment values along the concealment direction. Therefore, the combination of Chien et al. and Richardson fail to disclose all of the features of applicant's claim 1 and the claims that depend therefrom.

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Applicant's independent claim 15 recites the features (1) deriving at least one Intra_4x4 prediction mode in accordance with the H.264 coding technique for each identified macroblock to define a concealment direction; and (2) establishing an interpolation filter for estimating concealment values along the concealment direction. As discussed above, neither the Chien et al. patent nor the Richardson paper disclose such features, and therefore claim 15, and the claims that depend therefrom, patentably distinguish over the art of record.

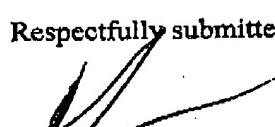
Conclusion

In view of the foregoing, applicants solicit entry of this amendment and allowance of the claims. If the Examiner cannot take such action, the Examiner should contact the applicant's attorney at (609) 734-6820 to arrange a mutually convenient date and time for a telephonic interview.

No fees are believed due with regard to this Amendment. Please charge any fee or credit any overpayment to Deposit Account No. 07-0832.

Respectfully submitted,

By:


Robert B. Levy
Attorney for Applicants
Reg. No. 28,234
Phone (609) 734-6820

Patent Operations
Thomson Licensing LLC
P.O. Box 5312
Princeton, New Jersey 08543-5312
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